DO NOT DESTROY: THIS MANUAL IS REQUIRED BY LAW. KEEP UNTIL THE VEHICLE IS COMPLETED BY THE FINAL STAGE MANUFACTURER.

2018
F-SUPER DUTY
Basic (Stripped) Chassis
INCOMPLETE VEHICLE MANUAL

Incomplete Vehicle Type For This Manual

F-53 / F-59
Basic (Stripped) Chassis

January, 2017
▽JU94-19A268-AA

U.S. & CANADIAN MOTOR VEHICLE SAFETY STANDARDS
(Application By Vehicle Type)

Standard Number	Title of Standard	Vehicle Type			Equipment (5)
		Bus (Not School Bus)	MPV	Truck (Walk-In Van)	
101	Controls and Displays	X	X	X	
102	Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect	X	X	X	
103	Windshield Defrosting and Defogging System	X	X	X	
104	Windshield Wiping and Washing Systems	X	X	X	
105	Hydraulic and Electric Brake Systems	X	X	X	
106	Brake Hoses	X	X	X	X
108	Lamps, Reflective Devices, and Associated Equipment	X	X	X	X
111	Rear Visibility	X	X	X	
113	Hood Latch System	X	X	X	
115	Vehicle Identification Number (Canada only)	X	X	X	
116	Motor Vehicle Brake Fluids	X	X	X	X
119(4)	New Pneumatic Tires for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 Pounds) and Motorcycles				X
120	Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 Pounds)	X(3)	X(3)	X(3)	X
124	Accelerator Control Systems	X	X	X	
205	Glazing Materials	X	X	X	X
207	Seating Systems	X	X	X	
208	Occupant Crash Protection	X	X(1)(2)	X(1)(2)	X
209	Seat Belt Assemblies	X	X	X	X
210	Seat Belt Assembly Anchorages	X	X	X	
217	Bus Emergency Exits and Window Retention and Release	X			
301.1	LPG Fuel System Integrity (Canada only)	X	X	X	
301.2	CNG Fuel System Integrity (Canada only)	X	X	X	
302	Flammability of Interior Materials	X	X	X	
304	Compressed Natural Gas Fuel Container Integrity (U.S. only)	X	X	X	
403	Platform Lift Systems for Motor Vehicles				X
404	Platform Lift Installations in Motor Vehicles	X	X	X	
PART 393.67	Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks			X	X
PART 565	Vehicle Identification Number (VIN) Requirements (U.S. only)	X	X	X	
PART 567	Certification (Label Contents & Location)	X	X	X	
1106	Noise Emissions (Canada only)	X	X	X	

(1) Injury criteria are applicable to vehicles with GVWR of 3856 kg [8,500 lb] or less and an unloaded vehice weight of 2495 kg [5,500 lb] or less.

(2) Injury criteria is optional on walk-in van-type trucks, motor homes, vehicles manufactured for operation by persons with disabilities etc. See 49 CFR, Part 571.208, S4.2.2. In Canada, injury criteria is only optional for a vehicle manufactured for operation by persons with disabilities.

(3) The tire and rim information requirements of Standard 120 will be met when the Incomplete Vehicle Information Label is affixed to the vehicle per 49CFR567.4. This label is shipped with this manual in the plastic bag.

(4) Canadian 119 requirements are found in the Motor Vehicle Tire Safety Standards.

(5) This column identifies Standards that have equipment/component requirements.

INTRODUCTION

Information in this manual is furnished pursuant to United States and Canadian safety regulations or, in some cases where the information is not required by regulation, is furnished for the convenience of intermediate or final stage vehicle manufacturers. Incomplete vehicles manufactured for sale or importation into the U.S., are specially equipped for the United States. The descriptions and statements contained in the manual relate only to motor vehicle safety standards issued under the National Traffic and Motor Vehicle Safety Act of 1966 as amended.

An incomplete vehicle manufactured for sale or importation into Canada is specially equipped for Canada. This vehicle conforms to the applicable Canadian Motor Vehicle Safety Standards (CMVSS) on the date of manufacture printed on the cover of this manual. Requirements unique to vehicles for use in Canada are identified in the "Statements of Conformity" and the "Canadian Vehicles" sections of the manual.

The "Emission Certification Information" section of this manual contains information regarding conformity to exhaust and evaporative emission and exterior noise regulations of the United States, Canada, and the State of California and fuel economy regulations of the United States.

This manual should not be relied upon with respect to compliance with any regulation of the Federal Highway Administration or regulations issued pursuant to the Occupational Safety and Health Act (OSHA) or any other Federal, state, provincial, or local regulations governing the performance or construction of motor vehicles (except for those requirements shown in the "Emission Certification Information" section of this manual under the headings "Unleaded Gasoline Label," "Warranty and Maintenance," and "Emission Control Information Label"). It is the responsibility of the final stage manufacturer to determine applicability and comply with any Federal, state, or local requirements not detailed in this manual.

IMPORTANT:

UNITED STATES VEHICLES

Ford Motor Company has endeavored, whenever possible, to state the specific conditions under which an incomplete vehicle may be completed to conform with each applicable Federal Motor Vehicle Safety Standard. These specific statements are intended to aid subsequent stage manufacturers in avoiding instances of inadvertent noncompliance to particular standards.

Note that the final responsibility for the compliance of the completed vehicle rests with the Final Stage Manufacturer who is required by law to certify, as prescribed by Title 49, Code of Federal Regulations, Part 567.5, that the completed vehicle conforms to all applicable Federal Motor Vehicle Safety Standards and that all applicable Federal, state and California emission/noise standards are conformed with.

Ford Motor Company does not make any representation as to the appropriateness of modifications for any particular application other than expressly stated herein. Intermediate and Final Stage Manufacturers must exercise proper engineering judgment to determine if a modification is appropriate for their specific application.

IMPORTANT:

UNITED STATES AND CANADIAN VEHICLES

Alterations to an incomplete vehicle by someone other than Ford Motor Company, or damage in transit, may affect compliance statements that are furnished in this manual, or representations that are printed on the label that may be affixed to a vehicle.

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DEFINITIONS

The following definitions are from Title 49, Code of Federal Regulations (49CFR), Parts 567.3, 568.3 and 571.3 where noted. Canadian definitions are from Canadian Motor Vehicle Safety Regulations (CMVSR), Section 2(1), and are in italics. Ford Motor Company definitions are for the purpose of this manual only. Some terms are followed by an abbreviation that is used throughout this manual.

Ambulance – is a vehicle for emergency medical care which provides: A driver's compartment; a patient compartment to accommodate an Emergency Medical Technician (EMT), Paramedic, and two litter patients (one patient on the primary cot and secondary patient on folding litter located on the squad bench) so positioned that the primary patient can be given intensive life-support during transit; equipment and supplies for emergency care at the scene as well as during transport; two-way radio communication; and, when necessary, equipment for light rescue/extrication procedures. The Ambulance shall be designed and constructed to afford safety, comfort, and avoid aggravation of the patient's injury or illness. (From Federal Specification KKK-A-1822-F). Ford Motor Company also includes within its definition of ambulance any vehicle that is used for transporting life-support equipment, for rescue operations, or for non-emergency patient transfer if the engine of the vehicle is equipped with a "throttle kicker" device, which enables an operator to increase engine speed over normal idle speed when the vehicle is not moving. (Ford Motor Company)

B-Pillar – is the vehicle body structure located directly rearward of each front door. This structure will include the outer panel, all inner panels or reinforcements which support the door opening, the door latching system, and/or the roof structure. (Ford Motor Company)

Basic (Stripped) Chassis – an incomplete vehicle, without occupant compartment, that requires the addition of an occupant compartment and cargo-carrying, work performing, or load-bearing components to perform its intended function. (Ford Motor Company)

Bus – a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons. (49CFR571.3)

Bus *(Canada) – a vehicle having a designated seating capacity of more than 10, but does not include a trailer or a vehicle imported temporarily for special purposes. (autobus)*

Chassis Cab – an incomplete vehicle, with completed occupant compartment, that requires only the addition of cargo-carrying, work performing, or load-bearing components to perform its intended functions. (49CFR567.3)

Completed Vehicle – a vehicle that requires no further manufacturing operations to perform its intended function. (49CFR567.3)

Critical Control Item – is a component or procedure which may affect compliance with a federal regulation or, which could directly affect the safe operation of the vehicle. The identifying symbol is an inverted delta (▽). (Ford Motor Company)

Cutaway Chassis – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the completed vehicle. (Ford Motor Company)

Cutaway Chassis *(Canada) – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the vehicle. (châssis tronqué)*

Designated Seating Position – means a seat location that has a seating surface width, as described in §571.10(c) of this part, of at least 330 mm (13 inches). The number of designated seating positions at a seat location is determined according to the procedure set forth in §571.10(b) of this part. However, for trucks and multipurpose passenger vehicles with a gross vehicle weight rating greater than 10,000 lbs, police vehicles as defined in S7 of FMVSS 208, firefighting vehicles, ambulances, and motor homes, a seating location that is labeled in accordance with S4.4 of FMVSS 207 will not be considered a designated seating position. For the sole purpose of determining the classification of any vehicle sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, any location in such a vehicle intended for securement of an occupied wheelchair during vehicle operation is regarded as four designated seating positions. (49CFR571.3)

Designated Seating Position *(Canada) – means a location in a vehicle that is likely to be used as a seating position and that has a seating surface width of at least 330 mm; (place assise désignée)*

Final Stage Manufacturer – a person who [*company that (CMVSR)*] performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle. (49CFR567.3)

Forward Control – a vehicle configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length. (49CFR571.3)

Gross Axle Weight Rating (GAWR) – the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces. (49CFR571.3)

Gross Combination Weight Rating (GCWR) – the value specified by the manufacturer as the loaded weight of a combination vehicle. (49CFR571.3)

Gross Vehicle Weight Rating (GVWR) – the value specified by the manufacturer as the loaded weight of a single vehicle. (49CFR571.3)

H-Point – the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins For Use in Defining Vehicle Seating Accommodations," November 1962. (49CFR571.3)

H-point *(Canada) – the mechanically hinged hip point of a manikin that simulates the actual pivot centre of the human torso and thigh, described in SAE Standard J826 APR80, Devices for Use in Defining and Measuring Vehicle Seating Accommodation. (point H)*

Incomplete Vehicle – an assemblage consisting, at a minimum, of chassis (including the frame) structure, power train, steering system, suspension system, and braking system, in the state that those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle. (49CFR567.3)

(Continuted next page)

DEFINITIONS

(Continued)

Incomplete Vehicle *(Canada) – a vehicle (a) other than a vehicle imported temporarily for special purposes, that is capable of being driven and that consists, at a minimum, of a chassis structure, power train, steering system, suspension system and braking system in the state in which those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle or (b) that is an incomplete trailer. (véhicule incomplet)*

Incomplete Vehicle Manufacturer – a person who [*company that (CMVSR)*] manufactures an incomplete vehicle by assembling components none of which, taken separately, constitute an incomplete vehicle. (49CFR567.3)

Intermediate Manufacturer – a person [*company (CMVSR)*], other than the incomplete vehicle manufacturer or the final stage manufacturer, who [*that (CMVSR)*] performs manufacturing operations on a vehicle manufactured in two or more stages. (49CFR567.3)

Motor Home – a multi-purpose vehicle with motive power that is designed to provide temporary residential accommodations, as evidenced by the presence of at least four of the following facilities: Cooking; refrigeration or ice box; self-contained toilet; heating and/or air conditioning [*system that can function independently of the vehicle engine (CMVSR)*]; a potable water supply system including a faucet and a sink; and a separate 110-125 volt electrical power supply and/or an LP gas supply. (49CFR571.3)

Multifunction School Activity Bus (MFSAB) – a school bus whose purposes do not include transporting students to and from home or school bus stops. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) – a motor vehicle with motive power, except a low-speed vehicle or trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) *(Canada) – a vehicle having a designated seating capacity of 10 or less that is constructed either on a truck chassis or with special features for occasional off road operation, but does not include an air cushion vehicle, an all-terrain vehicle, a golf cart, a low-speed vehicle, a passenger car, a three-wheeled vehicle, a truck or a vehicle imported temporarily for special purposes. (véhicule de tourisme à usages multiples)*

School Bus – a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation. (49CFR571.3)

School Bus *(Canada) – a bus designed or equipped primarily to carry students to and from school. (autobus scolaire)*

Seating Reference Point – the unique design H-point, as defined in SAE J1100 (June 1984), which:

(a) establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle,

(b) has X, Y, and Z coordinates established relative to the designed vehicle structure,

(c) simulates the position of the pivot center of the human torso and thigh, and

(d) is the reference point employed to position the two-dimensional drafting template described in SAE J826 (May 1987).

(abbreviated by Ford Motor Company)

Seating Reference Point *(Canada) – the unique Design H-point, as defined in section 2.2.11.1 of SAE Recommended Practice J1100 (June 1993), that:*

(a) establishes the rearmost normal design driving or riding position of each designated seating position, taking into account all modes of adjustment – horizontal, vertical and tilt – in a vehicle,

(b) has X, Y and Z coordinates, as defined in section 2.2.3 of SAE Recommended Practice J1100 (June 1993), established relative to the designed vehicle structure,

(c) simulates the position of the pivot centre of the human torso and thigh, and

(d) is the reference point employed to position the H-point template with the 95th percentile leg, as described in section 3.1 of SAE Standard J826 (June 1992), or, if that drafting template cannot be positioned, the reference point when the seat is in its rearmost adjustment position.

(point de référence de position assise)

Second Unit Body (SUB) – consists of the body structure and/or all the cargo carrying, work performing, and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle. (Ford Motor Company)

Subsequent Stage Manufacturer – a term which means either Intermediate or Final Stage Manufacturers or both. (Ford Motor Company)

Trimmed Seat – a complete functional seat assembly including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, all attaching hardware, and the final trim material (i.e., cloth, leather, or vinyl). (Ford Motor Company)

Truck – a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment. (49CFR571.3)

Truck *(Canada) – a vehicle designed primarily for the transportation of property or special-purpose equipment but does not include a competition vehicle, a crawler-mounted vehicle, a trailer, a work vehicle, a vehicle imported temporarily for special purposes or a vehicle designed for operation exclusively off-road. (camion).*

Unloaded Vehicle Weight (UVW) – the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when it is not in use. (49CFR571.3)

Unloaded Vehicle Weight *(Canada) – the weight of a vehicle equipped with the containers for the fluids necessary for the operation of the vehicle filled to their maximum capacity, but without cargo or occupants. (poids du véhicule sans charge)*

Untrimmed Seat – the structure including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, and all attaching hardware required for a functional seat assembly without the final trim material (e.g., cloth, leather, or vinyl) and trim material attaching components. (Ford Motor Company)

Walk-In Van – a special cargo/mail delivery vehicle that has only one designated seating position. That designated seating position must be forward facing and for use only by the driver. The vehicle usually has a thin and light sliding (or folding) side door for easy operation and a high roof clearance that a person of medium stature can enter the passenger compartment area in an up-right position. (49CFR571.214)

Walk-In Van *(Canada) – a van type of truck in which a person having a height of 1700 mm can enter the occupant compartment in an upright position by a front door. (fourgon à accès en position debout)*

GENERAL INFORMATION

Information in this section is provided pursuant to Title 49, Code of Federal Regulations, Part 568 – "Vehicles Manufactured in Two or More Stages," and Section 6 of the Canadian Motor Vehicle Safety Regulations (CMVSR) – "Vehicles Manufactured in Stages." Part 568 specifies that final stage manufacturers must complete vehicles in compliance with all applicable Federal Motor Vehicle Safety Standards and affix a label to each incomplete vehicle that is completed in accordance with 49CFR567.5. Section 6.6 of the CMVSR provides labeling requirements for vehicles that are to be sold in Canada.

DIRECTIONS

STATEMENTS OF CONFORMITY

The "Statements of Conformity" section of this manual lists the Federal Motor Vehicle Safety Standards in effect on the date of manufacture of this incomplete vehicle that are applicable to the type(s) of completed vehicles into which this incomplete vehicle may be manufactured. This date is shown on the label affixed to the cover of this manual. These statements, in most cases, apply to specific types of incomplete or completed vehicles and identify GVWR and UVW weight ranges.

The incomplete vehicle type is identified by the 5th, 6th, and 7th digits of the Vehicle Identification Number (VIN). The completed vehicle types to which this incomplete vehicle may appropriately be completed is printed on the label, under the heading "May Be Completed As," that is affixed to the cover of this document.

Each statement of conformity is identified by a safety standard number located at the left margin. Because there may be multiple statements of conformity for each safety standard, use care to select the appropriate statement. Unique CMVSS requirements will be identified at the conclusion of the representations for a particular safety standard.

Compliance statements provided in this manual are of the three following types (49CFR568.4):

Type I • A statement that the vehicle, when completed, will conform to the standard if no alterations are made in identified components of the incomplete vehicle.

Type II • A statement of specific conditions of final manufacture under which the incomplete vehicle manufacturer specifies that the completed vehicle will conform to the standard.

Type III • A statement of conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation as to conformity with the standard.

IMPORTANT:

UNITED STATES AND CANADIAN VEHICLES

Compliance representations in this manual are accurate for incomplete vehicles as manufactured by or for Ford Motor Company. Further manufacture, modifications or alterations to an incomplete vehicle by someone other than Ford Motor Company, or damage in transit, may affect compliance statements that are represented in this manual.

The incomplete vehicle with which this manual is included is suitable for completion only as a multi-purpose passenger vehicle or a bus other than a school bus having the GVWR specified on the front cover of this manual. It is not suitable for completion as either an ambulance or a school bus.

IMPORTANT:

To rely on the compliance representations in this manual, the incomplete vehicle must be completed as one of the completed vehicle types designated on the label affixed to the cover of this manual, and must not exceed the specified GVWR, GAWRS, or the Unloaded Vehicle Weight limits when specified in this manual.

FORD TRUCK ASSISTANCE

Throughout this manual you will find references to information found in the *Ford Truck Body Builders Layout Book*. Additional design recommendations and specifications are also provided to assist subsequent stage manufacturers in completing incomplete vehicles. The *Ford Truck Body Builders Layout Book* may be accessed via the web at www.fleet.ford.com/truckbbas under the "Publications" tab.

The Ford Truck Body Builder Advisory Service may be consulted regarding information contained in this manual.

- Call (877) 840-4338
- E-mail via the web at www.fleet.ford.com/truckbbas under the "Contact Us" tab

INCOMPLETE VEHICLE MANUAL COVER

The cover of this manual identifies the incomplete vehicle for which compliance representations are contained in this manual. Also, a label is affixed to the cover which includes the Vehicle Identification Number (VIN) for the specific vehicle to which this manual belongs. The label identifies the following information which pertains only to the vehicle with the corresponding VIN.

- GVWR.
- Front and rear GAWRs.
- Tire and wheel size.
- Cold tire inflation pressure (kPa/PSI).
- Completed vehicle type(s) into which the incomplete vehicle may be manufactured.

INCOMPLETE VEHICLE INFORMATION LABEL

The Incomplete Vehicle Information Label is required by Federal Law 49CFR 567.5 & 568.6 to be affixed to the completed vehicle; the Basic (Stripped) Chassis label is located inside the protective plastic bag for this manual. A detailed explanation of all label information is available in the Ford Source Book for the appropriate model year, at your local Ford Dealer. Placement on the interior driver-door lock pillar or as otherwise provided per 49CFR567.4 is required. A sample of a typical label is shown below.

The 5th, 6th, and 7th digits of the Vehicle Identification Number (VIN) will identify the incomplete vehicle type. Additional VIN information is available in the Ford Source Book for the appropriate model year.

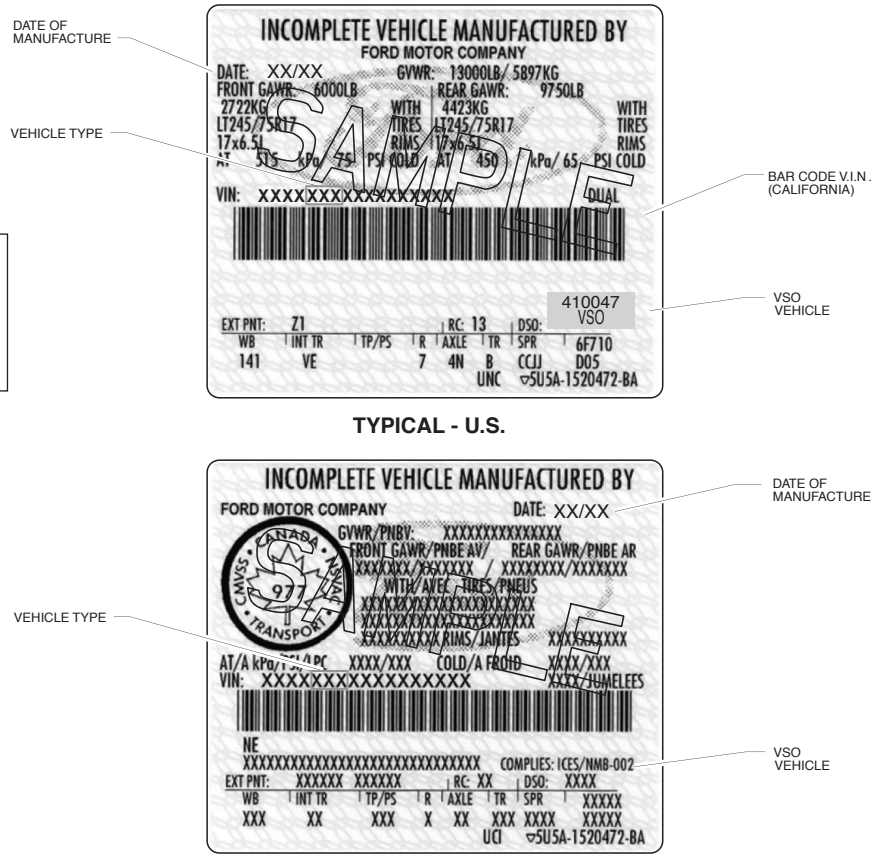
California Air Resources Board (CARB), requires a Vehicle Identification Number (VIN) Label having a non-contact bar code reading wand capability. The bar code located directly below the VIN on the Incomplete Vehicle Information Label, when provided, will comply with this regulation.

The Canadian Motor Vehicle Safety Act and Regulations require installation of an Incomplete Vehicle Information Label with the National Safety mark on it on vehicles manufactured for sale in Canada. A sample of a typical label is shown below.

Vehicle Lines:

F5D – Motorhome Chassis

F5K – Commercial Stripped Chassis



INCOMPLETE VEHICLE INFORMATION LABEL

STATEMENTS OF CONFORMITY

The following Statements of Conformity apply to vehicles that are produced for sale or importation into the United States or Canada. The term “Incomplete Vehicle Types” in these statements refers to the type of the vehicle illustrated on this manual’s cover and as defined in the “Vehicle Description” section of this manual.

The number preceding each Statement of Conformity refers to the number designation for a Part or a Section of Part 571 of the Federal Motor Vehicle Safety Standards.

The statements provided for each safety standard number are appropriate compliance representations for each Canadian safety standard number if this incomplete vehicle, identified by the VIN on the front of the document, was manufactured by Ford Motor Company for sale or use in Canada, except as may be noted at the conclusion of each safety standard number.

101 This vehicle, when completed, will meet the identification, color, and illumination requirements of Standard 101, Controls and Displays, based upon the components supplied by Ford Motor Company. However, component location and visibility requirements are the responsibility of the final stage manufacturer; accordingly, Ford Motor Company makes no representation as to comformity to the component location and visibility requirements of this Standard.

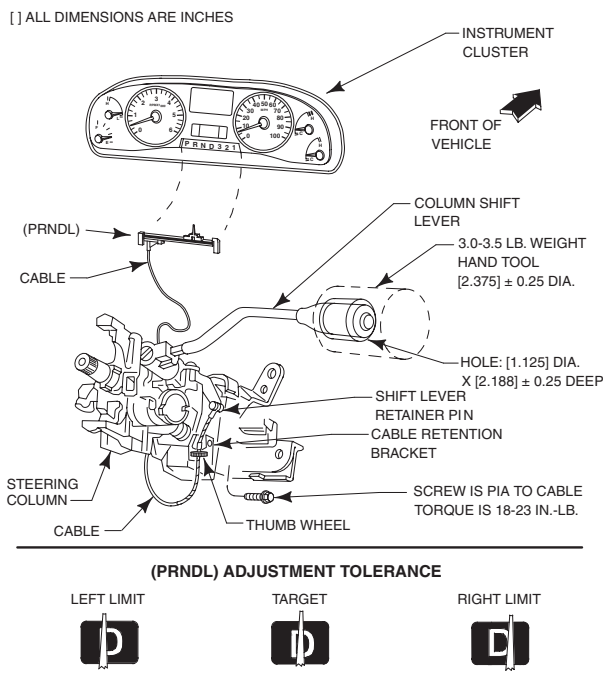
102 This vehicle, when completed, will conform to Standard 102, Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect, if:

- No alterations or adjustments are made to the transmission, shift cable, transmission outer shift lever, shift cable bracket, the starter interlock system and wiring circuit from the interlock switch to the power source.
- The Basic (Stripped) Chassis is equipped with a temporary transmission gear selector indicator (PRNDL) which must be replaced with the transmission gear selector indicator (PRNDL) that is shipped with the vehicle in the dunnage box and installed and adjusted following the instructions and specifications shown in the figure below.

If an auxiliary transmission is added to this vehicle, it must conform to the requirements of this Standard.

103 Conformity with Standard 103, Windshield Defrosting and Defogging Systems, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

104 Conformity with Standard 104. Windshield Wiping and Washing Systems, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.



1. Route the cable after the instrument cluster is installed in the vehicle. Do not kink the cable. Do not bend the cable to a radius less than 2.0 inches. Route the cable from the cluster in a counter-clockwise direction, under the steering column, secure using the screw provided. Do not wrap the cable around the steering column. The steering column shroud installation should not affect the cable routing or function.
2. Pull on the cable end loop for a functional check. The cable should operate with a similar effort as required prior to routing. Then place the cable loop on the shift lever retainer pin.
3. Rotate the column shift lever clockwise until it bottoms out in first gear.
4. Rotate the column shift lever counter-clockwise 3 detents for Overdrive “Oval D” position for TorqShift™ Transmissions.
5. Install a 3 pound weight, as defined in this illustration, on the end of the column shift lever.
6. Center the pointer in the middle of the “Oval D” position by rotating the thumb wheel.
7. Remove the 3 pound weight. The pointer must be within the tolerances as defined in this illustration.
8. After the steering column shrouds are installed, the transmission gear selector indicator (PRNDL) system must be checked for proper operation.

FIGURE A - INSTALLATION OF GEAR SELECTOR INDICATOR (PRNDL)

105 This vehicle when completed, will conform to Standard 105, Hydraulic and Electric Brake Systems, if:

- No alterations, modifications, or replacements are made to the following:
  - Service or parking brake system
  - Antilock brake system
  - Wheels and tires
  - Brake system indicator lamp and wiring
  - Brake system reservoir labeling
  - Suspension ride height or spring rate*
  - Hydro-boost or Hydro-max system
  - Power steering pump and lines
  - Engine Belt Drive System
  - Addition of a tag axle
- The Second Unit Body (SUB) weight is at least 889 kilograms (1960 lbs).
- The SUB center of gravity is forward of the centerline of the rear axle.
- The chassis wheelbase has not been modified shorter than the shortest nor longer than the longest wheelbase of each model (GVWR) offered.
- Vertical distance from the center of gravity (CG_v) of the completed vehicle to the ground is 1219 mm (48 inches) or less for GVWs up to 22,000 lbs. Vertical distance from the CG_v of the completed vehicle to the ground is 1270 mm (50 inches) or less for 24,000 lbs and 26,000 lbs GVWs.
- The maximum GAWR and GVWR, as identified on the cover of this document, are not exceeded with the vehicle weight at Unloaded Vehicle Weight + Passenger Load.
- Refer to the “Brake System” section of this manual for further information.
- The service or parking brake pedal assembly operation is not restricted by any alteration or added components.

NOTE: Under no circumstances can individual GAWR’s be exceeded nor can the GVWR be exceeded.

***NOTE:** Ford Motor Company provides Type I and Type II FMVSS/CMVSS 105 compliance statements for vehicles built to factory standard or optional specifications. Suspension ride height and/or spring rate modifications are factors that may affect compliance to this Standard. If an alterer or final stage manufacturer modifies the suspension ride height or spring rate of the factory-equipped vehicle, then they are responsible for engineering analysis or physical testing to ensure compliance and sign-off to Standard 105.

WARNING:

Do not wrap the brake lines with any material that could cause water, dirt, sand or other foreign material to accumulate around the lines, which could potentially result in brake line damage or corrosion.

CENTER OF GRAVITY

If the center of gravity of the SUB is not forward of the centerline of the rear axle and the SUB is not above the minimum weight, then the center of gravity location must be verified.

Center of gravity and weight of the second unit body (SUB) and/or added equipment (Wb) must be such that the completed vehicle center of gravity locations (as approximated in Equations 1 and 2) fall within the appropriate region given below.

EQUATION 1

$$CG_v = \frac{CG_{vb}W_b + CG_{vc}\left(W_c + W_l\right) 12{,}500}{GVWR}$$

EQUATION 2

$$CG_h = \frac{\left(W_{rb} + W_{rc} + \left(\frac{500 \times CG_{hp}}{WB}\right) + W_{rl}\right) \times WB}{GVWR}$$

Using the CGh of the vehicle (from Equation 2), Equations 3 and 4 below will determine the allowable range of CGv if the actual CGv (from Equation 1) is within the calculated range, then the center of gravity location is acceptable.

EQUATION 3

Upper Limit:
CGv = 1.27 x CGh – 86.27 (For 158" WB)
CGv = 1.27 x CGh – 91.67 (For 168” WB)
CGv = 1.27 x CGh – 97.03 (For 178" WB)
CGv = 1.27 x CGh – 103.57 (For 190" WB)
CGv = 1.27 x CGh – 113.34 (For 208" WB)
CGv = 1.27 x CGh – 124.24 (For 228" WB)
CGv = 1.27 x CGh – 132.28 (For 242" WB)
CGv = 1.27 x CGh – 137.75 (For 252" WB)

EQUATION 4

Lower Limit:
CGv = 1.27 x CGh – 96.63 (For 158" WB)
CGv = 1.27 x CGh – 102.71 (For 168” WB)
CGv = 1.27 x CGh – 108.31 (For 178" WB)
CGv = 1.27 x CGh – 115.61 (For 190" WB)
CGv = 1.27 x CGh – 126.60 (For 208" WB)
CGv = 1.27 x CGh – 138.77 (For 228" WB)
CGv = 1.27 x CGh – 147.25 (For 242" WB)
CGv = 1.27 x CGh – 153.33 (For 252" WB)

FMVSS 105 DEFINITIONS

CG_v = Vertical distance from the ground to the completed center of gravity [inches].

CG_h = Horizontal distance from ℄ of the front wheels to completed vehicle center of gravity [inches].

CG_{vb} = Vertical distance from the ground to the center of gravity of the SUB and/or permanently attached added equipment [inches]. (See Calculation Suggestions on next page).

CG_{vc} = Vertical distance from the ground to the center of gravity of the chassis

- 19.5" wheels:

  Motorhome chassis = 25.8 inches
  Commercial stripped chassis = 23.8 inches

- 22.5" wheels = 27.8 inches for GVWs up to 22,000 lbs

- 22.5" wheels = 28.5 inches for 24,000 lb and 26,000 lb GVWs

CG_{hp} = Horizontal distance from the ℄ of the front wheels to the 500 pounds passenger weight.

W_b = Weight of the SUB and/or permanently attached added equipment [pounds].

W_{rb} = Weight on the rear wheels of the SUB and/or permanently attached added equipment [pounds].

W_{rc} = Weight at the rear wheels of the vehicle chassis (fuel tanks full) [pounds]. Including option weight.

W_c = Weight of the vehicle chassis (fuel tanks full) [pounds]. Including option weight.

WB = Vehicle wheelbase [inches].

W_t = Total unladen weight = (W_b + W_c + 500#) [pounds].

GVWR = Gross Vehicle Weight Rating of the vehicle [pounds].

W_l = Remaining cargo capacity [pounds].

Where: W_l = GVWR - (W_b + W_c + 500#)

W_{rl} = Weight of the remaining cargo capacity on the rear wheels [pounds].

CG_{hl} = Horizontal distance from the ℄ of the front wheels to the cargo center of gravity [inches]. It may be estimated as the distance from the ℄ of the front wheel to the horizontal midpoint of the cargo area.

SUB = A Second Unit Body consists of all the cargo carrying, work performing, and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle.

105 Calculation Suggestions:

In the case where the rear weight of the SUB (and/or added equipment) must be reduced or the CGv is found to be below the allowed minimum CGv, then it may be possible to bring the vehicle into compliance by moving the CGh forward. Forward movement of the CGh can be accomplished by:

- Redistributing the weight of the SUB and/or added equipment.
- Adding permanently attached ballast forward of the CGh. In order to reduce the rear weight, the ballast must be forward of the front axle. (Caution must be taken not to exceed the GVWR or front GAWR of the vehicle.)

The following general equations can be used to find the center of gravity of the SUB and/or added equipment when there are several elements making up the CG.

$$CG_{vb} = \frac{CG_{vb1}(W_{b1}) + CG_{vb2}(W_{b2}) + \ldots + CG_{vbn}(W_{bn})}{W_{b1} + W_{b2} + \ldots + W_{bn}}$$

and the horizontal CG locations of the combined SUB and/or added equipment is:

$$CG_{hb} = \frac{(W_{rb1} + W_{rb2} + \ldots + W_{rbn})\ WB}{W_{b1} + W_{b2} + \ldots + W_{bn}}$$

The front/rear weight breakdown can be found with the use of the following equation.

$$W_{rb} = \frac{CG_{hb}(W_{b1} + W_{b2} + \ldots + W_{bn})}{WB}$$

Conversely, the front weight component of the SUB and/or added equipment is:

$$W_{fb} = (W_{b1} + W_{b2} + \ldots + W_{bn}) - W_{rb}$$

NOTICE – VEHICLE HANDLING INFORMATION

The weight of the body structure and its center of gravity location (both longitudinally and vertically), as well as the weight and positioning of the cargo load are important to the handling of the completed vehicle. Subsequent stage manufacturers should note that matching a body to a chassis in a manner appropriate for the intended use of the vehicle is the responsibility of the Final Stage Manufacturer. Following the representations of this manual with respect to center of gravity locations and body weights for compliance with Federal Motor Vehicle Safety standards is only part of the task of producing a completed vehicle that handles comfortably in service.

106 This vehicle when completed, will conform to Standard 106, Brake Hoses, if the brake hose assemblies supplied by Ford Motor Company are not removed, altered or replaced and if no brake hose assemblies are added.

108 Conformity with Standard 108, Lamps, Reflective Devices, and Associated Equipment, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this standard. However, Ford Motor Company does represent that the items of lighting equipment provided in the dunnage box attached to the chassis are designed to conform to the equipment requirements of Standard 108 that apply to the device only, and, additionally, that the provided items of lighting equipment will meet the vehicle requirements if they are installed in a location and manner as required by Standard 108.

108 Canadian Requirements:

The preceding statements for Standard 108 are appropriate compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, if this vehicle is manufactured for sale or use in Canada, provided:

- No component of the Daytime Running Lamp (DRL) system is removed, relocated, or modified.

111 Conformity with Standard 111, Rear Visibility, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly Ford Motor Company makes no representation as to conformity with this Standard.

113 Conformity with Standard 113, Hood Latch System, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly Ford Motor Company makes no representation as to conformity with this Standard.

115 Canadian Requirements:

The statements for Part 565 are appropriate compliance representations for CMVSS 115, Vehicle Identification Number, if this incomplete vehicle was manufactured for sale or use in Canada.

116 This vehicle, when completed, will conform to Standard 116, Motor Vehicle Brake Fluids, so long as any brake fluid added or replaced conforms to the appropriate DOT specification (labeled on the master cylinder) of the Standard and contaminants are not introduced into the hydraulic brake system.

119 The statement below is applicable to all incomplete vehicle types:

All tires supplied by Ford Motor Company are in full conformity with Standard 119, New Pneumatic Tires for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 Pounds) and Motorcycles.

If additional tires are installed or the existing tires are replaced by subsequent stage manufacturers, they must conform to the requirements of Standard 119.

120 This vehicle, when completed, will conform to the tire and rim selection requirements of Standard 120, Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 Pounds), if the tire or rim assemblies are not removed, altered or replaced and the final stage manufacturer must, in accordance with the requirements of Standard 120 and Part 567 of Title 49 Code of Federal Regulations (Section 6.6 of the Canadian Motor Vehicle Safety Regulations) either affixes a label indicating tire size, rim size and cold inflation pressure information and gross axle weight ratings that are printed on the label affixed to the cover of this manual, or affixes the Incomplete Vehicle Information Label included in the plastic bag along with this Incomplete Vehicle Manual.

124 This vehicle, when completed, will conform to Standard 124, Accelerator Control Systems, if:

- No alterations are made to the accelerator pedal, mounting hardware, or other components of the accelerator control system as installed by Ford Motor Company.
- No equipment is added, nor existing equipment modified which would restrict operation of the accelerator control system.
- No alterations are made to the Pedal Position Sensor and all associated hardware and wiring.

205 Conformity with Standard 205, Glazing Materials, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

207 Conformity with Standard 207, Seating Systems, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

208 Conformity with Standard 208, Occupant Crash Protection, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity of this vehicle. Any seat belt assemblies added to a vehicle must conform to the applicable requirements of this Standard.

209 Conformity with Standard 209, Seat Belt Assemblies, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

210 Conformity with Standard 210, Seat Belt Assembly Anchorages, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

217 Conformity with Standard 217, Bus Emergency Exits and Window Retention and Release, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

217 Canadian Requirements:

The preceding statements for FMVSS 217 are appropriate compliance representations for CMVSS 217, Bus Window Retention, Release and Emergency Exits, when a vehicle is completed as a Bus (not School Bus) and if this incomplete vehicle was manufactured for sale or use in Canada.

301.1 Canadian Requirements:

This incomplete vehicle does not comply with CMVSS Standard 301.1, LPG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

301.2 Canadian Requirements:

This incomplete vehicle does not comply with CMVSS Standard 301.2, CNG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

302 Conformity with Standard 302, Flammability of Interior Materials, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

304 U.S. Requirements:

This incomplete vehicle does not comply with Standard 304, Compressed Natural Gas Fuel Container Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

403 The statement below is applicable to all incomplete vehicle types:

This incomplete vehicle does not comply with Standard 403, Platform Lift Systems for Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

404 The statement below is applicable to all incomplete vehicle types:

This incomplete vehicle does not comply with Standard 404, Platform Lift Installations in Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

Part 393.67 Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks

The 40 gallon fuel tank supplied on a Ford Commercial Stripped Chassis will conform to the Part 393.67, Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks, if the fuel tank as provided by Ford Motor Company is not altered on the completed vehicle.

Part 565 U.S. Requirements:

This vehicle, when completed, will conform to Part 565, Vehicle Identification Number (VIN) Requirements, if the vehicle identification number printed on the label affixed to the cover of this manual is mounted and displayed in accordance with the requirements of this Standard.

Part 567 / CMVSR Section 6.6

The statement below is applicable to all incomplete vehicle types:

This incomplete vehicle does not comply with the intermediate and final stage manufacturer requirements of Part 567 - Certification, nor the Canadian Motor Vehicle Safety Regulations, Section 6.6 - Final-stage Manufacturer's Compliance Label. It is the responsibility of the intermediate and final stage manufacturers to provide additional labeling to meet these requirements. Ford Motor Company makes no representation as to conformity.

1106 Canadian Requirements:

The Basic (Stripped) Chassis as built by Ford Motor Company is too incomplete for Ford Motor Company to be able to determine the extent to which it would meet the Exterior Sound Level requirements of Section 2 of Standard 1106, Noise Emissions, and therefore Ford Motor Company makes no representation as to conformity to this requirement.

The Basic (Stripped) Chassis as built by Ford Motor Company is not equipped with a cab or body structure and therefore Ford Motor Company makes no representation as to conformity to the Interior Sound Level requirement of Section 5 of Standard 1106.

CANADIAN VEHICLES

(Vehicles to be completed for sale or use in Canada)

VEHICLE IDENTIFICATION

Refer to the "Vehicle Description" section of this manual for additional information.

DAYTIME RUNNING LAMP (DRL)

Compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, are in the "Statements of Conformity" section of this manual. The following items are required for CMVSS 108 compliance:

- The DRL module circuits are not to be altered.
- DRL module is not to be repositioned.
- Basic (Stripped) Chassis, when equipped with a DRL module as provided by Ford Motor Company, is designed only for a two headlamp system.

CANADIAN RADIO FREQUENCY INTERFERENCE (RFI) INFORMATION

All vehicles powered by spark ignition engines (e.g.: gasoline, natural gas, or propane engines) and manufactured in Canada or for sale or use in Canada are subject to the Canadian "Regulations for the Control of Interference to Radio Reception" per Interference-Causing Equipment Standard (ICES-002) and applicable test method according to "CAN/CSA-C108.4-M06". Violation of these regulations is punishable by fine or imprisonment. This Ford-built incomplete vehicle (if other than a Basic (Stripped) Chassis) was designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may have been authorized by the Department of Communications. However, because Ford Motor Company has no control over how this incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

The following information is supplied to subsequent stage manufacturers to help them avoid increasing the RFI emissions of this vehicle in the course of completing it.

For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions. Affected components could include spark plugs, ignition wires, ignition coils, ground straps, ignition component shields, accessory drive belts, instrument voltage regulator suppressor assembly, and ignition coil suppressor assembly.

More specifically:

- All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford Motor Company.
- Shields on ignition coils must remain installed.
- Replacement spark plugs, ignition wires, and ignition coils must be equivalent in their RFI suppression properties to original equipment.
- Electrical grounds on all components must be retained.
- Metallic components installed on the body or chassis must be grounded to the chassis.
- Electrical circuits added to the vehicle must not be installed near the high voltage ignition components.
- Only "static conductive" accessory drive belts should be used. Fan, water pump, power steering, and other belts should be of the OEM type or equivalent that will not build up a static electrical charge.
- Engine compartment wiring must not be rerouted in any manner.
- The Powertrain Control Module (PCM) must not be relocated from the position as installed by Ford Motor Company.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

EMISSION CERTIFICATION INFORMATION

CAUTION:

U.S.:

Vehicles are emission certified for registration in specific areas of the United States. For example, **VEHICLES CERTIFIED AND LABELED FOR SALE IN CALIFORNIA CAN NOT BE SOLD IN THE STATES THAT REQUIRE FEDERALLY CERTIFIED VEHICLES AND VEHICLES CERTIFIED TO FEDERAL STANDARDS CAN NOT BE SOLD IN STATES THAT REQUIRE CALIFORNIA CERTIFIED VEHICLES.** It is the subsequent stage manufacturer's responsibility to purchase a vehicle certified for the state/area in which the vehicle will be sold. EPA has stated that under certain circumstances they will not enforce these requirements. For further guidance consult EPA's "Policy on Cross Border Sales of California Vehicles."

CANADA:

If the completed vehicle is intended for sale or use in Canada, the intermediate or final stage manufacturer must insure that the incomplete vehicle is ordered through a Canadian dealer or is ordered from Ford Motor Company with the appropriate Canadian market option code. Failure to do so may result in an incomplete vehicle that is built with an emissions system and labeling that are not in compliance with the requirements of the Canadian Environmental Protection Act.

IMPORTANT:

It is the responsibility of the body builder, installer, or subsequent stage manufacturer to ensure that the maximum completed vehicle curb weight and frontal area specified by Ford Motor Company are not exceeded. If these restrictions are exceeded, or if the vehicle is modified such that it will not comply with applicable emission standards throughout its useful life, the body builder, installer, or subsequent stage manufacturer will be considered a manufacturer for purposes of complying with U.S. Federal, California, or Canadian exhaust and evaporative emission requirements, and Federal fuel economy standards, labeling, and certain other requirements.

IMPORTANT:

For purposes of Government Regulation, a body builder, installer, or any subsequent manufacturer may be considered a manufacturer.

VEHICLE EMISSION CONTROL INFORMATION LABEL

To meet United States Environmental Protection Agency regulations, the Vehicle Emission Control Information (VECI) label must be affixed in the engine compartment in a location that is readily visible after installation and in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment that is easily detached from the vehicle.

When the VECI label is supplied, but not attached to the vehicle, it must be permanently mounted in a readily visible location to meet the preceding requirements. In addition, whether the label is already affixed or to be affixed, no components shall be installed which visibly obscure the label in any way that fails to satisfy the visibility requirements described in the California Emission Control Label Specifications.

For Canadian requirements, consult On-Road Vehicle and Engine Emission Regulations (SOR).

FRONTAL AREA AND WEIGHT RESTRICTIONS:

Incomplete vehicles using engines which are certified as heavy duty engines will not have frontal area or curb weight restrictions based on exhaust emissions regulations. It is important, however, that the final stage manufacturer observe vehicle restrictions from vehicle safety requirements, etc., which are located elsewhere in this manual.

WARNING – VEHICLE OPERATING TEMPERATURES

Certain exhaust system components, including exhaust heat shielding systems, have been installed on some vehicles in our assembly plants in an effort to provide protection against engine compartment and exhaust system temperatures. Subsequent aftermarket installers/manufacturers are responsible for providing thermal protection (e.g. underbody heat shields) for any structure and/or equipment added to the vehicle and should not remove any components or exhaust heat shielding installed on the vehicle by Ford Motor Company.

All exposed interior sheet metal of closed structures (e.g. floor pan of cab and/or secondary structure, tool boxes, etc.) should be covered with an insulating material capable of protecting vehicle occupants and contents from temperatures potentially up to 700°F.

HIGH ALTITUDE REQUIREMENTS

United States Environmental Protection Agency regulations do not contain unique emission certification requirements for trucks that will be sold or delivered to customers for principal use above 1,219 m [4,000 ft.].

EMISSION CONTROL HARDWARE

Any body builder, installer, or subsequent stage manufacturer must also assure that all emission control hardware furnished with incomplete vehicles is on the vehicle and is operational and that applicable instructions for incorporating such hardware into the completed vehicle's electrical or mechanical systems are strictly followed.

UNLEADED GASOLINE LABEL

Regulations no longer require the manufacturer to affix permanent labels reading "Unleaded Gasoline Only" or "Unleaded Fuel Only" to vehicles destined for sale in the United States or Canada. Such labels may however be required for vehicles sold into other markets. It is the responsibility of the body builder, installer, or any subsequent manufacturer to properly label vehicles for the market in which they are sold.

EXTERIOR NOISE

New vehicles which have a gross vehicle weight rating in excess of 4536 kg [10,000 lb] include a partially or wholly enclosed operator's compartment, and are manufactured for use in the United States, must comply with U.S. Environmental Protection Agency's exterior noise emission regulations for medium and heavy trucks (40 CFR Part 205, Subpart B) which establish a noise emission limit of 80 dB (A).

However, the Basic (Stripped) Chassis as built by Ford is too incomplete to constitute a regulated vehicle and Ford does not represent that it complies with those regulations. With respect to the Basic (Stripped) Chassis, it is the responsibility of the subsequent stage manufacturer of that vehicle at the time it first conforms to the regulatory definition of "vehicle" to comply with the requirements imposed upon manufacturers by these regulations.

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TAMPERING WITH NOISE CONTROLS

Federal law prohibits the removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into such vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use. Federal Law also prohibits the use of such vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:

- Removal of fender apron absorbers, fender apron barriers, underbody noise shields, or acoustical absorptive material.
- Removal of or rendering inoperative the engine speed governor so as to allow engine speed to exceed manufacturer's specifications.
- Removal or modification of air duct, air intake choke or silencer, air cleaner, or air cleaner element.
- Removal of, or rendering inoperative, exhaust system components including the catalyst inlet pipe, muffler, outlet pipe, resonator, or diffuser.
- Removal of the fan shroud. Removal of or rendering inoperative the fan clutch.

New vehicles manufactured for sale in Canada must comply with applicable provisions of Canada Motor Vehicle Safety Standard 1106, Noise.

Additional noise emissions information is contained in the *Ford Truck Body Builders Layout Book.*

WARRANTY AND MAINTENANCE

A copy of the appropriate *Ford Truck Owners Guide and Warranty Guide* must be installed in every vehicle prior to sale to the ultimate purchaser in order to provide emission systems warranty information and maintenance schedules. It also provides, where required by EPA noise control regulations for vehicles having GVWR over 4536 kg [10,000 lb], noise emissions warranty information, instructions for maintenance, use, and repair of vehicle noise emission control systems, a maintenance record format, and list of prohibited tampering acts.

EVAPORATIVE EMISSIONS

All Federal light and heavy duty trucks and all California vehicles with gasoline engines are required to comply with evaporative emissions requirements established by the Environmental Protection Agency or the California Air Resources Board. Production fuel systems supplied on incomplete trucks manufactured by Ford Motor Company comply with these requirements. **If the subsequent stage manufacturer adds to or modifies the fuel system in any manner, it becomes the responsibility of the modifier to assure compliance with the applicable regulations.**

MALFUNCTION INDICATOR LIGHT (MIL)

The "Malfunction Indicator Light" is used to indicate malfunctions of the engine's emission control system and certain powertrain emissions-related components. For all incomplete vehicles, except Basic (Stripped) Chassis (which is not equipped with an instrument panel), the MIL is Ford-installed and operational in the instrument panel.

The F-53 / F-59 Basic (Stripped) Chassis vehicle has the MIL warning light installed in the instrument cluster, which is shipped in the dunnage box. If an alternate instrument cluster is utilized, the final stage manufacturer must install an operational MIL in the instrument cluster. The MIL must be located on the driver's-side instrument panel, be of sufficient illumination and location to be readily visible under all lighting conditions and shall be amber in color when illuminated. The MIL, when illuminated, shall display the phrase "Check Engine" or "Service Engine Soon". The word "Powertrain" may be substituted for "Engine" in the previous phrases. Alternatively, the ISO engine symbol may be substituted for the word "Engine" or for the entire phrase. This is a requirement for emission certification.

OZONE DEPLETING SUBSTANCE (ODS)

The Clean Air Act of 1990, Section 611 requires any product (i.e., completed vehicle) containing or manufactured with any Class I Ozone Depleting Substance on, or after May 15,1993 must be identified with a "clearly and conspicuously attached label."

Ford Motor Company has eliminated Class I ODS from its manufacturing processes. All Ford Truck incomplete vehicles will not have Class I ODS content.

Manufacturers, including subsequent stage manufacturers, are required to label their products if the product, including any component (whether manufactured by that manufacturer or not), contains a Class I ODS or if the manufacturer used a Class I ODS in the manufacturing of the product. In the case where Ford Motor Company provides a label saying the incomplete vehicle contains a Class I ODS that information must be placed on the product warning label. (See EPA regulation on wording, placement, size, and combining labels.) In Canada consult the appropriate Provincial or Territorial Ministry of Environment.

CALIFORNIA FUEL VAPOR RECOVERY

California regulations require that the vehicle fuel systems be designed to accommodate a vapor recovery fueling nozzle including unobstructed access to the fill pipe. Fuel filler pipes installed per Figures B in the "Fuel System" section of this manual will comply with the "Specifications For Fill Pipes and Openings of Motor Vehicle Fuel Tanks" referenced in Title 13 California Administrative Code provided no part of the aftermarket body, as installed, intrudes within a 254mm [10 in] radius cylinder which has its axis parallel to the ground at point "Z". The cylindrical zone uses the axis described above, starts at the outer most surface of the Ford supplied fuel filler housing, and projects outward (away from the frame). The fuel pipe housing component is shown on the referenced figures and is attached to the aftermarket body via 4.76 mm [0.188 in] diameter rivets.

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CALIFORNIA MOTOR VEHICLE EMISSION CONTROL LABEL

To meet California emission certification regulations, the Vehicle Emission Control Information (VECI) label must be welded, riveted, or otherwise permanently attached to an area within the engine compartment or to the engine in such a way that it will be readily visible to the average person after installation of the engine in a vehicle. In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label). The label shall be affixed in such a manner that it cannot be removed without being destroyed or defaced, and shall not be affixed to any part which is likely to be replaced during the vehicle's useful life. As used in these specifications, readily visible to the average person shall mean that the label shall be readable from a distance of 460 mm [18 in] without any obstructions from vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts, (e.g., vacuum hoses, ignition wires). Alternately, information required by these specifications to be printed on the label shall be no smaller than 8 point type size provided that no vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts that can be moved out of the way without disconnection, obstruct the label.

Completed vehicles for retail sale in California require a machine-readable Vehicle Identification Number (VIN) bar code label made of paper, plastic, metal, or other permanent material. Conformity with CARB Motor Vehicle Emission Control Label specifications for VIN label is not substantially affected by the design of this incomplete vehicle. Accordingly, Ford Motor Company makes no representation as to conformity with this requirement. To assist a subsequent stage manufacturer with conforming to this specification Ford Motor Company is providing a label which will accompany this manual inside the protective plastic bag.

For the VECI and VIN labels, sufficient clearance shall be provided to use a non-contact bar code Reading Wand. For the VECI label, the label and any adhesives used shall be designed to withstand typical vehicle environment conditions in the area where the label is attached for the vehicle's total expected life. Typical vehicle environmental conditions shall include, but are not limited to, exposure to engine lubricants and coolants (e.g., gasoline, motor oil, brake fluids, water, ethylene glycol), under hood temperatures, steam cleaning, and paints or paint solvents.

RADIO FREQUENCY INTERFERENCE (RFI)

The ignition system on this Basic (Stripped) Chassis has been designed to be capable of compliance with RFI requirements established by the Canadian government. However, because Ford Motor Company has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with those requirements. Any ignition system component (i.e.: spark plugs, ignition wiring, coil suppressor assembly, etc.) that is replaced should be replaced by the same Ford Motor Company part number or equivalent to maintain RFI suppression.

While there are currently no RFI regulations in the United States specifically applicable to automotive ignition systems, all Ford Motor Company trucks built with an ignition system use the same or equivalent components to those supplied on Canadian vehicles.

Ford Motor Company recommends that all ignition system service be performed at a Ford authorized service facility to help hold RFI emissions levels to a minimum.

Additional RFI information is contained in the "Canadian Vehicles" section of this manual.

Devices that emit radio frequency (RF) energy such as AM/FM radios, mobile telecommunications systems (two-way radios, telephones), and radio controlled security systems are subject to the rules and regulations of the Federal Communications Communication (FCC), including 47 CFR Parts 2 and 15. Any such system installed in a vehicle should comply with those rules and should be installed only by a qualified technician. In addition, to ensure continued compliance with the FCC's regulations, RF devices must not be modified or changed in a manner not expressly approved by Ford Motor Company Mobile Communication Systems. RF devices particularly, if not properly installed, may adversely affect the operation of the vehicle. For example, such systems when operated may cause the engine to stumble or stall. In addition, such systems themselves may be damaged or their operation affected by the operation of the vehicle. (Citizens Band [CB] transceivers, garage door openers, and other transmitters whose power output is 5 watts or less, ordinarily will NOT affect vehicle operation.)

Because Ford Motor Company has no control over the operation or manufacture of such systems or their installation, Ford Motor Company cannot assume responsibility for any adverse effects or damage if this equipment is used.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

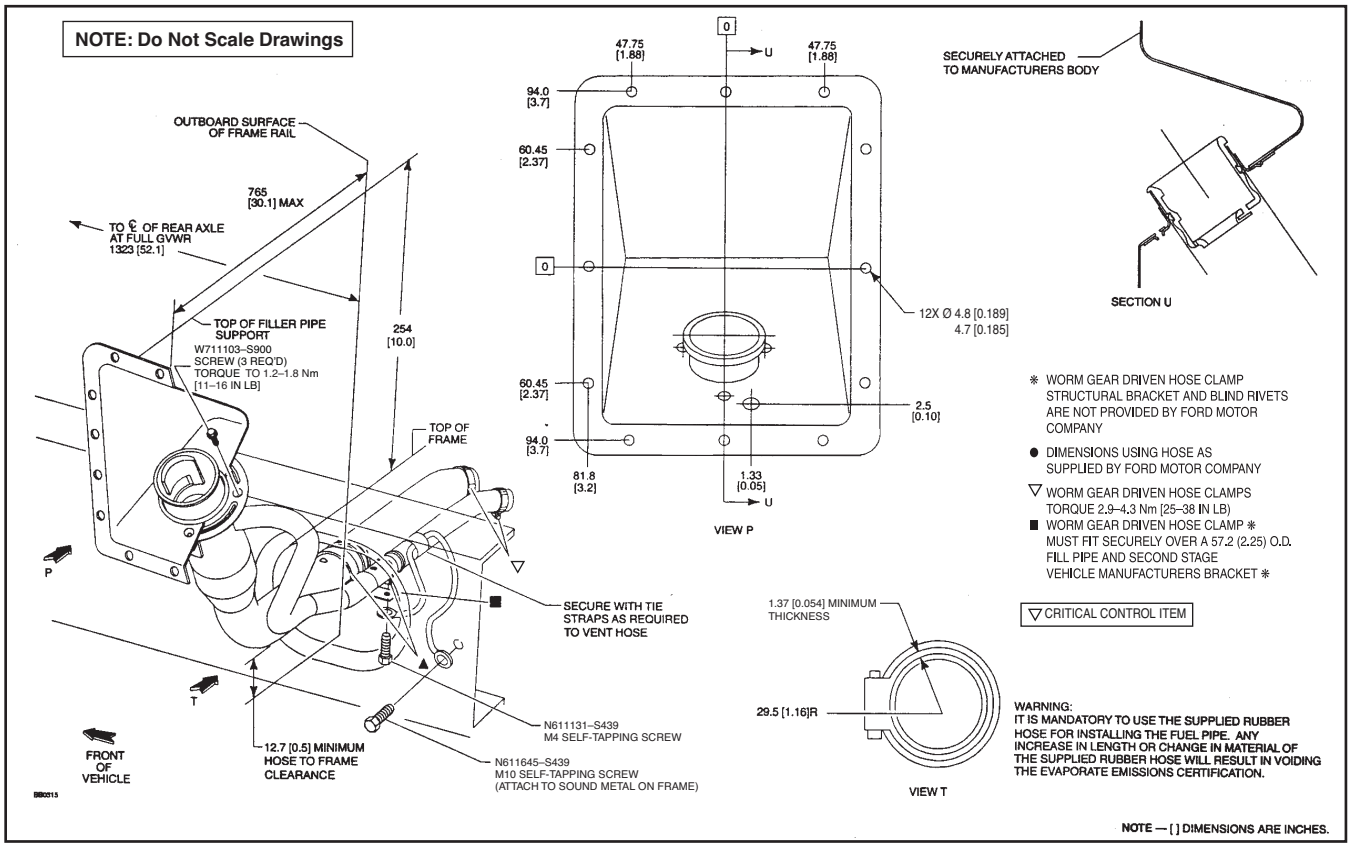
NOTE: Do Not Scale Drawings
OUTBOARD SURFACE OF FRAME RAIL
765 [30.1] MAX
TO ℄ OF REAR AXLE AT FULL GVWR 1323 [52.1]
TOP OF FILLER PIPE SUPPORT
W711103–S900
SCREW (3 REQ'D)
TORQUE TO 1.2–1.8 Nm [11–16 IN LB]
254 [10.0]
TOP OF FRAME
SECURE WITH TIE STRAPS AS REQUIRED TO VENT HOSE
N611131–S439
M4 SELF-TAPPING SCREW
N611645–S439
M10 SELF-TAPPING SCREW
(ATTACH TO SOUND METAL ON FRAME)
12.7 [0.5] MINIMUM HOSE TO FRAME CLEARANCE
FRONT OF VEHICLE
47.75 [1.88]
47.75 [1.88]
94.0 [3.7]
60.45 [2.37]
12X Ø 4.8 [0.189] 4.7 [0.185]
2.5 [0.10]
81.8 [3.2]
1.33 [0.05]
VIEW P
SECURELY ATTACHED TO MANUFACTURERS BODY
SECTION U
✻ WORM GEAR DRIVEN HOSE CLAMP STRUCTURAL BRACKET AND BLIND RIVETS ARE NOT PROVIDED BY FORD MOTOR COMPANY
● DIMENSIONS USING HOSE AS SUPPLIED BY FORD MOTOR COMPANY
▽ WORM GEAR DRIVEN HOSE CLAMPS TORQUE 2.9–4.3 Nm [25–38 IN LB)
■ WORM GEAR DRIVEN HOSE CLAMP ✻ MUST FIT SECURELY OVER A 57.2 (2.25) O.D. FILL PIPE AND SECOND STAGE VEHICLE MANUFACTURERS BRACKET ✻
▽ CRITICAL CONTROL ITEM
1.37 [0.054] MINIMUM THICKNESS
29.5 [1.16]R
VIEW T
WARNING:
IT IS MANDATORY TO USE THE SUPPLIED RUBBER HOSE FOR INSTALLING THE FUEL PIPE. ANY INCREASE IN LENGTH OR CHANGE IN MATERIAL OF THE SUPPLIED RUBBER HOSE WILL RESULT IN VOIDING THE EVAPORATE EMISSIONS CERTIFICATION.
NOTE — [ ] DIMENSIONS ARE INCHES.

FIGURE B – FUEL FILLER PIPE INSTALLATION

FUEL SYSTEM INFORMATION

The push connectors on steel fuel lines must be connected by snapping them into position and installing the appropriate Retainer as shown in Figure C.

When welding near fuel system components, all metallic components must be adequately shielded and protected from heat or weld splatter. All non-metallic components must be removed.

FUEL FILLER PIPE INSTALLATION

Ford Motor Company tests the provided fuel filler kit in a representative vehicle to verify that it is capable of providing adequate fuel filling function. However, Ford Motor Company has no control over how the filler pipe and vent line is modified or installed by the Vehicle Modifier. Consequently, the Vehicle Modifier must ensure that the fuel filler pipe and any extensions added to the fill or vent lines provide a continuous down slope from the filler pipe inlet to the fuel tank inlet, and are adequately supported to prevent sagging that could cause spray, spitback or premature shutoff during normal fueling operations. **The Final Stage Manufacturer is responsible for verifying acceptable fuel fill function on the completed vehicle.**

Lengthening/relocating the fuel filler pipe can only be done with the hose supplied in the dunnage box and steel tube provided by the body builder. No substitute hose material is allowed. Total length of the hose used in the system cannot exceed that of the original hose supplied in the dunnage box. Failure to comply may void the evaporative emissions certification. See *Ford Body Builders Layout Book* for further information.

No additional hose can be added to the canister purge lines. Lengthening of the system can only be accomplished by replacing one or more of the steel tubes with a longer tube. The number of joints and length of hose in the system cannot be increased. If any of the hose is damaged, it must be replaced with low permeability hose meeting current Ford Engineering Specifications. Failure to comply may void the evaporative emissions certification.

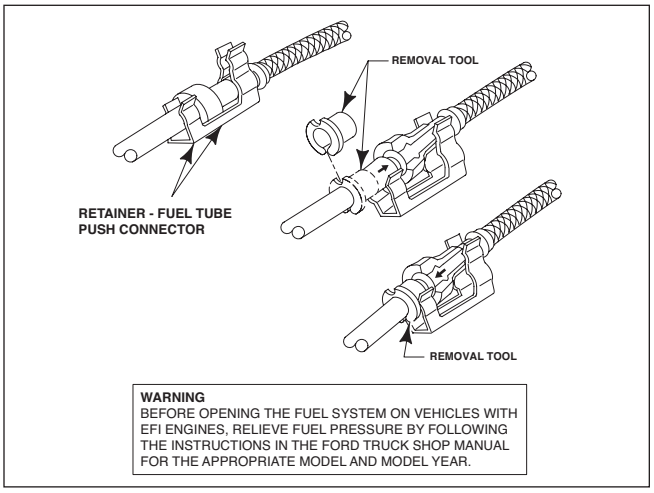
REMOVAL TOOL
RETAINER - FUEL TUBE PUSH CONNECTOR
REMOVAL TOOL
WARNING
BEFORE OPENING THE FUEL SYSTEM ON VEHICLES WITH EFI ENGINES, RELIEVE FUEL PRESSURE BY FOLLOWING THE INSTRUCTIONS IN THE FORD TRUCK SHOP MANUAL FOR THE APPROPRIATE MODEL AND MODEL YEAR.

FIGURE C – STEEL FUEL LINE PUSH-CONNECT

REFERENCE INFORMATION

FORD TRUCK BODY BUILDERS LAYOUT BOOK

Throughout this manual you will find references to information found in the *Ford Truck Body Builders Layout Book*. Additional Design Recommendations and specifications are also provided to assist subsequent stage manufacturers in completing chassis cab and incomplete vehicles. The *Ford Truck Body Builders Layout Book* can be accessed via the web at www.fleet.ford.com/truckbbas under the “Publications” tab.

FORD SERVICE PUBLICATIONS

Many Ford Service Publications pertain to specific Model Year and vehicle types. Ford Service Publications are available by subscription via the web at www.motorcraft.com. The following publications are a few of many manuals which are available from Helm Incorporated; call: 1-800-782-4356

- Ford Truck Shop Manuals
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FORD TRUCK BODY BUILDER ADVISORY SERVICE

The Ford Truck Body Builder Advisory Service may be consulted regarding information contained in this manual. Call toll free 877-840-4338 or e-mail via the web at www.fleet.ford.com/truckbbas under the “Contact Us” tab.

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